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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,280	07/06/2001	Gang Luo	(9917) NCRC-0051-US	6088

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EXAMINER

FLEURANTIN, JEAN B

ART UNIT	PAPER NUMBER
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2172

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/900,280

Applicant(s)

LUO ET AL.

Examiner

Jean B Fleurantin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4,7,8,16-19,33 and 41-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4,7,8,16-19,33 and 41-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

1. Claims 4, 7, 8, 16-19 and 33, 41-50 remain pending for examination.

***Response to Applicant' Remarks***

2. It is submitted that some allowable subject matter was suggested in the previous Office Action. The Examiner appreciates the amendment to the claims. However, the prior art of record has been thoroughly reviewed and upon further consideration the Examiner believes the prior art discloses the limitations of claims 4, 7, 8, 16-19 and 33, 41-50 discuss in the following rejection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 7, 8, 16-19 and 33, 41-50 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,484,159 issued to Mumick et al. (hereinafter "Mumick") in view of Dallan Quass et al., Making View Self-Maintainable for Data Warehousing, 1996 (hereinafter "Quass").

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As per claim 4, Mumick discloses a method comprising:

“receiving a first tuple into a base relation at a first node of a parallel database system having plurality nodes” (see col. 8, lines 5-9), “wherein the first tuple comprises a join attribute and the base relation is partitioned across the nodes according to an attribute different from the join attribute”, (see col. 8, line 15-21);

“identifying second tuples of a second relation”, (see figure 6, col. 8, lines 10-51);

“joining the first tuple with the second tuples based on the join attribute to produce join results” (see figure 6, col. 8, lines 10-51);

“storing the join results in a join view” as a view that has been stored is usable, like a table, as an input to a query, such a view termed a materialized view, (see col. 3, lines –39), and col. 5, lines 14-40). Mumick does not explicitly disclose the storing the first tuple in an auxiliary relation at a second node of the parallel database system, wherein the auxiliary relation is portioned across the nodes of the database system according to the join attribute. However, Quass discloses steps of materializing the auxiliary views to represent a significant savings over materializing the base relations, (see Quass page 159, col. 2, lines 5-23). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined teachings of Mumick and Quass with auxiliary relation. Such modification would allow the teachings of Mumick and Quass to improve the reliability of the auxiliary relation for materialized view, and to provide fast access to the integrated data, regardless of the availability of the data sources, (see Quass page 158, col. 1, lines 2-4).

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As per claims 7 and 18, the limitations of claims 7 and 18 are rejected in the analysis of claim 4, and these claim are rejected on that basis.

As per claims 8 and 19, in addition to claim 4, Mumick further discloses “receiving a third tuple into the base relation”, (see col. 3, lines 32-36);

“determining that a join view definition includes a condition on one of the attributes of the third tuple”, (see col. 3, lines 29-36);

“determining that the condition is not met by the one of the attributes of the third tuple”, (see col. 8, lines 52-39).

As per claim 16, in addition to claim 4, Mumick further discloses “store a join view to store join results of a join of at least first and second base relations based on a join condition including a first attribute of the first base relation and a second attribute of the second base relation”, (see col. 8, lines 22-43).

As per claim 33, the limitations of claim 33 are rejected in the analysis of claim 4, and this claim is rejected on that basis.

As per claim 17, Mumick further discloses, in addition to claim 4, “compare the second attributes of the second tuples with the first attribute of the first tuple to produce the join results for updating the join view” as two or more tables are merged to form a new table or view, the

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new table or view has a tuple corresponding to each value of a selected attributes present in any original table, (see col. 9, lines 16-20), and see col. 10, lines 30-36.

As per claim 41, in addition to claim 4, Mumick further discloses, “a controller adapted to update the join view using at least the first auxiliary relation” as propagation of the change table is particularly efficient when the change table depends only on the changes to the base relation, (see col. 10, lines 38-45),

“the join view to store results of a join of the base relations based on a query containing a select clause and a join condition” as query definitions include more queries, which are specifications of operations that are to be performed more tables in the database on more materialized views (see col. 3, lines 25-39), “the select clause specifying one or more attributes of the first base relation” as the materialized view corresponding to each value of at least one select attribute in any of the plurality tables, (see col. 2, lines 20-24).

As per claim 42, in addition to claims 4 and 41, Mumick does not explicitly disclose wherein the first attribute is a key of the first base relation and the second attribute is a foreign key of the second base relation that references the first attribute, and the controller to, in response to detecting that the first attribute is a key of the first relation and that the second attribute is a foreign key of the second base relation that references the first attribute. However, Quass discloses a views involving chain joins where the joins conditions are between a foreign key, joined to a set of relations, (see Quass page 162, col. 1, lines 1-22), and see Quass page 159, col. 1, lines 18-33). It would have been obvious to a person of ordinary skill in the art at the time the

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invention was made to modify the combined teachings of Mumick and Quass with wherein the first attribute is a key of the first base relation and the second attribute is a foreign key of the second base relation that references the first attribute. Such modification would allow the teachings of Mumick and Quass to improve the reliability of the auxiliary relation for materialized view, and to provide fast access to the integrated data, regardless of the availability of the data sources, (see Quass page 158, col. 1, lines 2-4).

***Prior Art***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

J. Albrecht et al., Supprting Hot Spots with Materialized Views.

US 2003/0093407 issued to Cochrane et al.

US 5,897,632 issued to Dar et al.

US 6,026,390 issued to Ross et al.

US 6,339,769 issued to Cochrane et al.

US 6,532,470 issued to Cochrane et al.

US 6,345,272 issued to Witkowski et al.

US 6,480,836 issued to Colby et al.

US 6,493,699 issued to Colby et al.

US 6,594,653 issued to Colby et al.

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### CONTACT INFORMATION

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Fleurantin whose telephone number is 703-308-6718.


The examiner can normally be reached on 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John B Breene can be reached on 703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jean Bolte Fleurantin

May 11, 2004

  
SHAHID ALAM  
PRIMARY EXAMINER